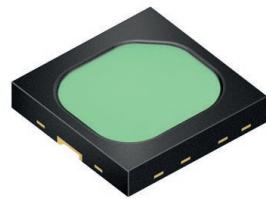


SFH 4735

OSLON® Black Flat

OSLON Black Flat (IR broad band emitter) - 120°



Applications

- Infrared Spectroscopy

Features:

- Package: diffuse silicone
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Spectral range of emission: (typ) 650 ... 1050 nm
- Wide viewing angle of 120°
- Low thermal resistance (Max. 9 K/W)

Ordering Information

Type	Total radiant flux ¹⁾ typ. $I_F = 350 \text{ mA}; \lambda = 600\text{nm} - 1050\text{nm}; t_p = 20\text{ms}$ ϕ_e	Ordering Code
SFH 4735	16 mW	Q65111A9885

Maximum Ratings

$T_A = 25 \text{ }^\circ\text{C}$

Parameter	Symbol	Values
Operating temperature	T_{op}	min. -40 °C max. 85 °C
Storage temperature	T_{stg}	min. -40 °C max. 85 °C
Junction temperature	T_j	max. 125 °C
Forward current	I_F	max. 500 mA
Surge current $t_p \leq 1 \text{ ms}; D = 0$	I_{FSM}	max. 1 A
Reverse current ²⁾	I_R	max. 200 mA
Power consumption	P_{tot}	max. 1900 W
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max. 2 kV

For the forward current and power consumption please see “maximum permissible forward current” diagram

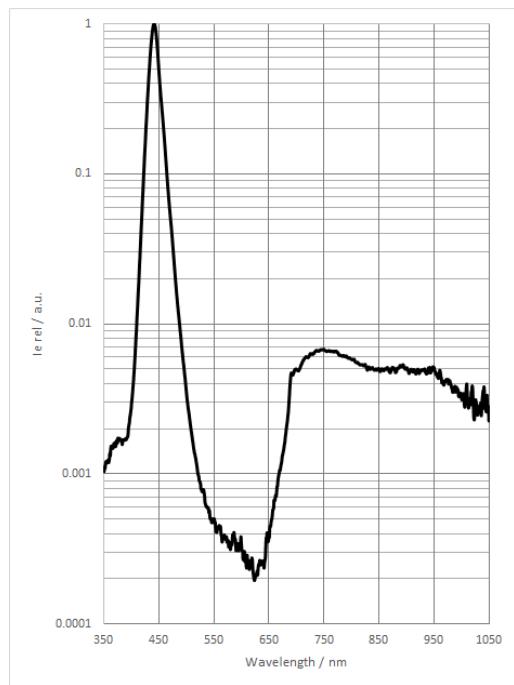
Characteristics

$I_F = 350 \text{ mA}$; $t_p = 20 \text{ ms}$; $T_A = 25^\circ\text{C}$

Parameter	Symbol	Values
Half angle	ϕ	typ. 60°
Forward voltage	V_F	typ. 2.95 V max. 3.5 V
Forward voltage $I_F = 500 \text{ mA}$; $t_p = 100 \mu\text{s}$	V_F	typ. 3 V max. 3.8 V
Reverse voltage ²⁾ $I_R = 20 \text{ mA}$	V_R	max. 1.2 V
Reverse voltage (ESD device) ²⁾	$V_{R_{\text{ESD}}}$	min. 45 V
Radiant intensity ³⁾ $\lambda = 350 - 600 \text{ nm}$	I_e	typ. 59 mW/sr
Radiant intensity ³⁾ $\lambda = 600 - 1050 \text{ nm}$	I_e	typ. 5 mW/sr
Total radiant flux ¹⁾ $\lambda = 350 - 600 \text{ nm}$	Φ_e	typ. 184 mW
Total radiant flux ¹⁾ $\lambda = 600 - 1050 \text{ nm}$	Φ_e	typ. 16 mW
Spectral flux $\lambda = 750 \text{ nm}$	$\Phi_{e,\lambda}$	typ. $60 \mu\text{W/nm}$
Spectral flux $\lambda = 850 \text{ nm}$	$\Phi_{e,\lambda}$	typ. $45 \mu\text{W/nm}$
Spectral flux $\lambda = 950 \text{ nm}$	$\Phi_{e,\lambda}$	typ. $45 \mu\text{W/nm}$
Thermal resistance junction solder point real ⁴⁾	R_{thJS}	max. 9.0 K/W

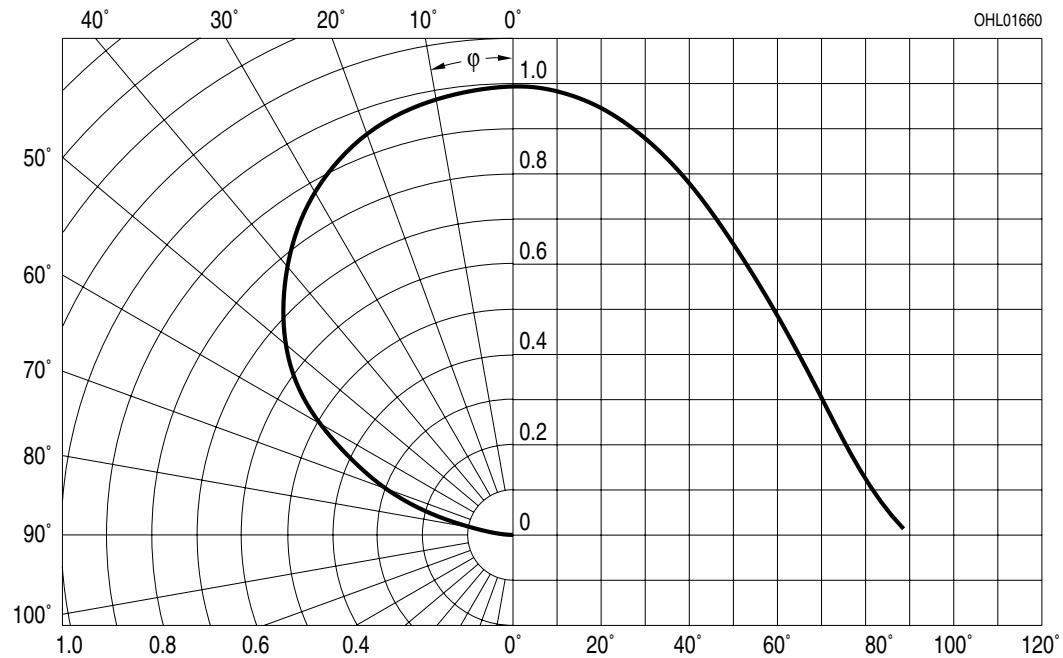
Relative Spectral Emission ^{5), 6)}

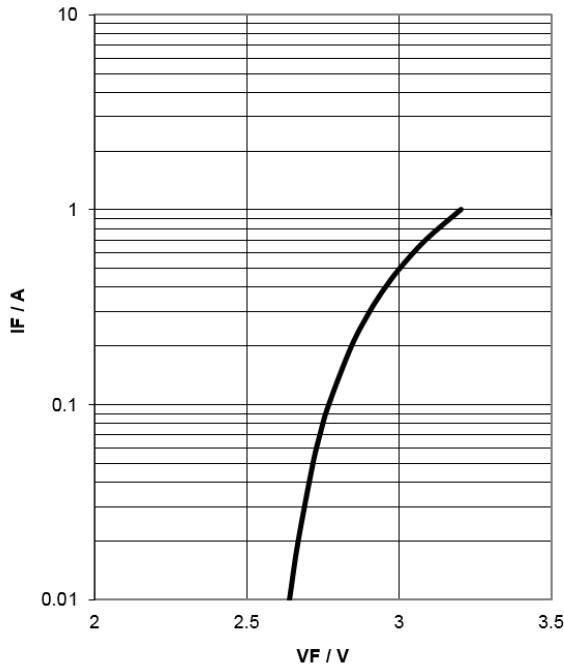
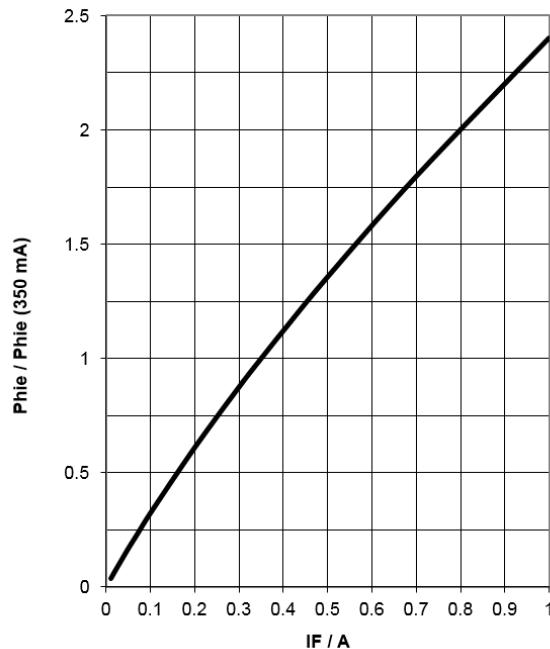
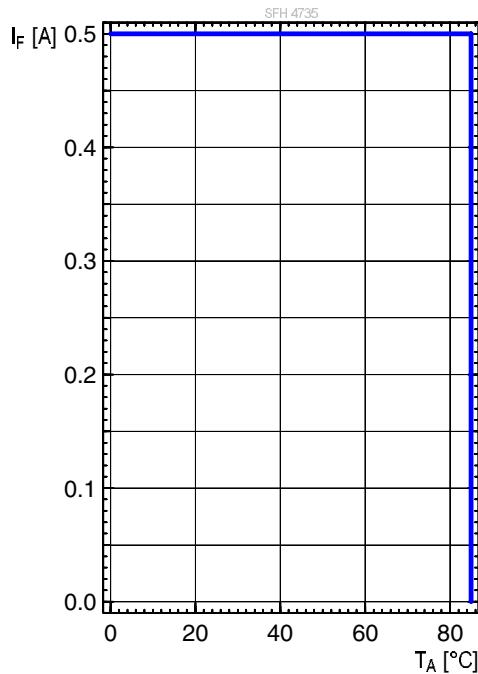
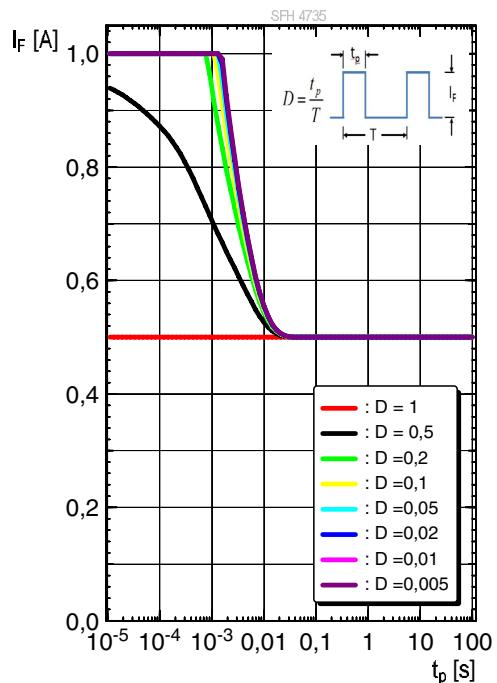
$I_{\text{rel}} = f(\lambda)$; $I_F = 350 \text{ mA}$; $t_p = 10 \text{ ms}$



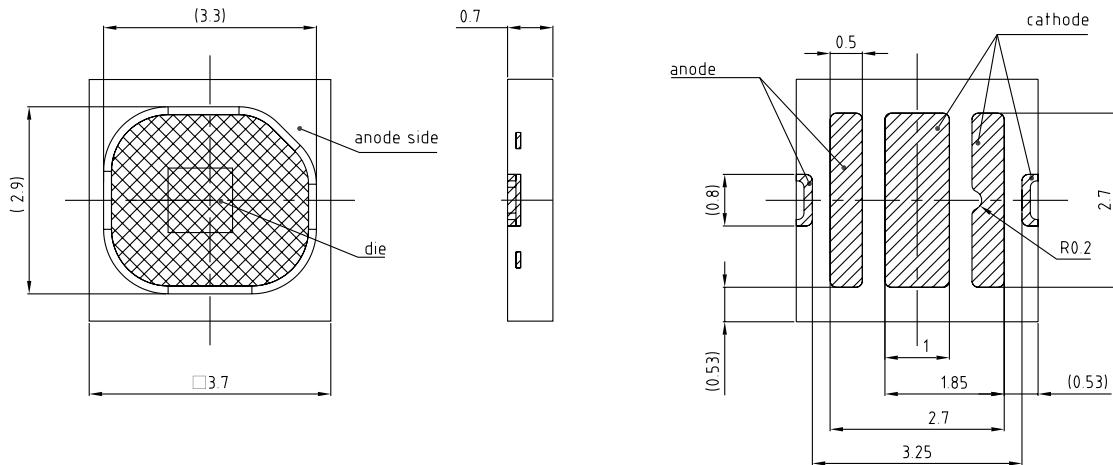
Radiation Characteristics ^{5), 6)}

$I_{\text{rel}} = f(\phi)$



Forward current ^{5), 6)} $I_F = f(V_F)$; single pulse; $t_p = 100 \mu s$ **Relative Total Radiant Flux** ^{5), 6)} $\Phi_e / \Phi_{e(350mA)} = f(I_F)$; single pulse; $t_p = 100 \mu s$ **Max. Permissible Forward Current** $I_{F,max} = f(T_S)$; $R_{thJS} = 9.0 \text{ K / W}$ **Permissible Pulse Handling Capability** $I_F = f(t_p)$; duty cycle $D = \frac{t_p}{T}$ parameter; $T_S = 85^\circ\text{C}$ 

Dimensional Drawing ⁷⁾



general tolerance ± 0.1

lead finish Au

C67062-A0189-A103

Approximate Weight: 23.0 mg

Package marking: Anode

ESD advice: The device is protected by ESD device which is connected in parallel to the Chip.

Recommended Solder Pad⁷⁾

E062.3010.107 -02

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

Recommended Solder Pad 7)

The diagram illustrates the OSLON Family Compatible Design, showing the component location on the pad with three distinct layers:

- Bottom Layer:** The bottom-most layer consists of a red dashed rectangular area labeled "foot print" and a blue hatched rectangular area labeled "Cu area".
- Middle Layer:** The middle layer is a green hatched area labeled "solder resist". It features a central vertical column of four rectangular pads, each with a height of 2.8 [0.110"] and a width of 0.55 [0.022"]. The distance between the centers of adjacent pads is 1 [0.039"].
- Top Layer:** The top-most layer is a white area containing a red dashed rectangular outline representing the "solder stencil". This stencil has a height of 2.6 [0.102"] and a width of 0.9 [0.035"]. The distance from the bottom of the solder resist layer to the bottom of the stencil is 0.4 [0.016"].

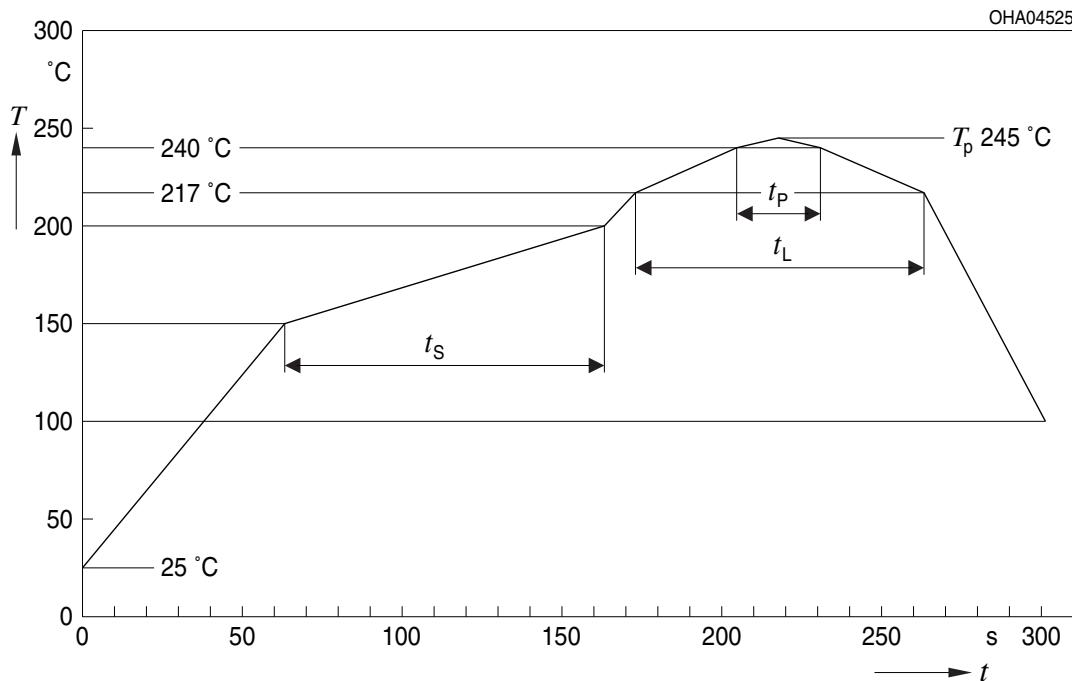
Dimensions are provided in both inches and millimeters. A legend at the bottom right identifies the colors: red for "foot print" and blue for "solder stencil".

E062.3010.110 -02

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

Reflow Soldering Profile

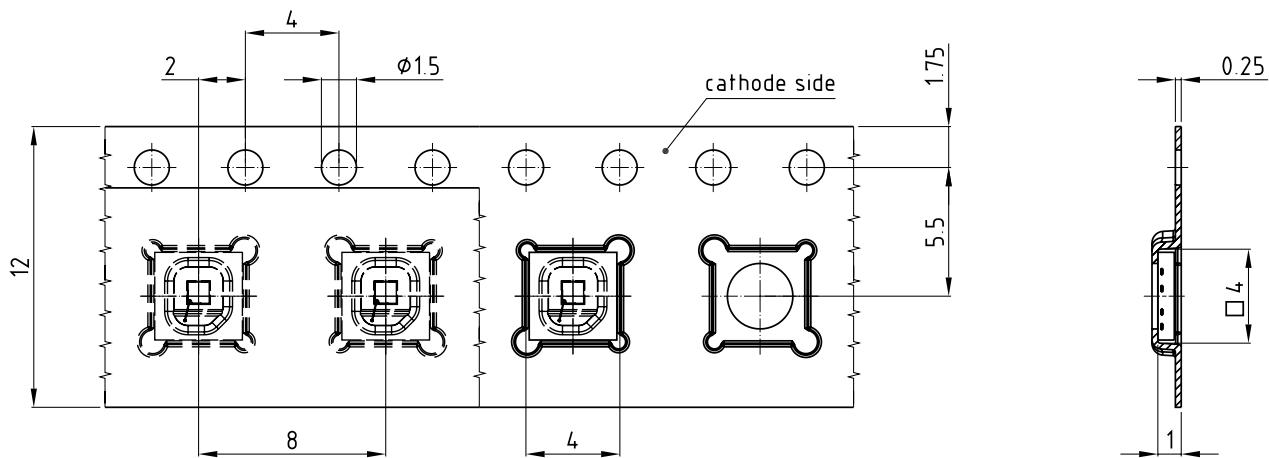
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



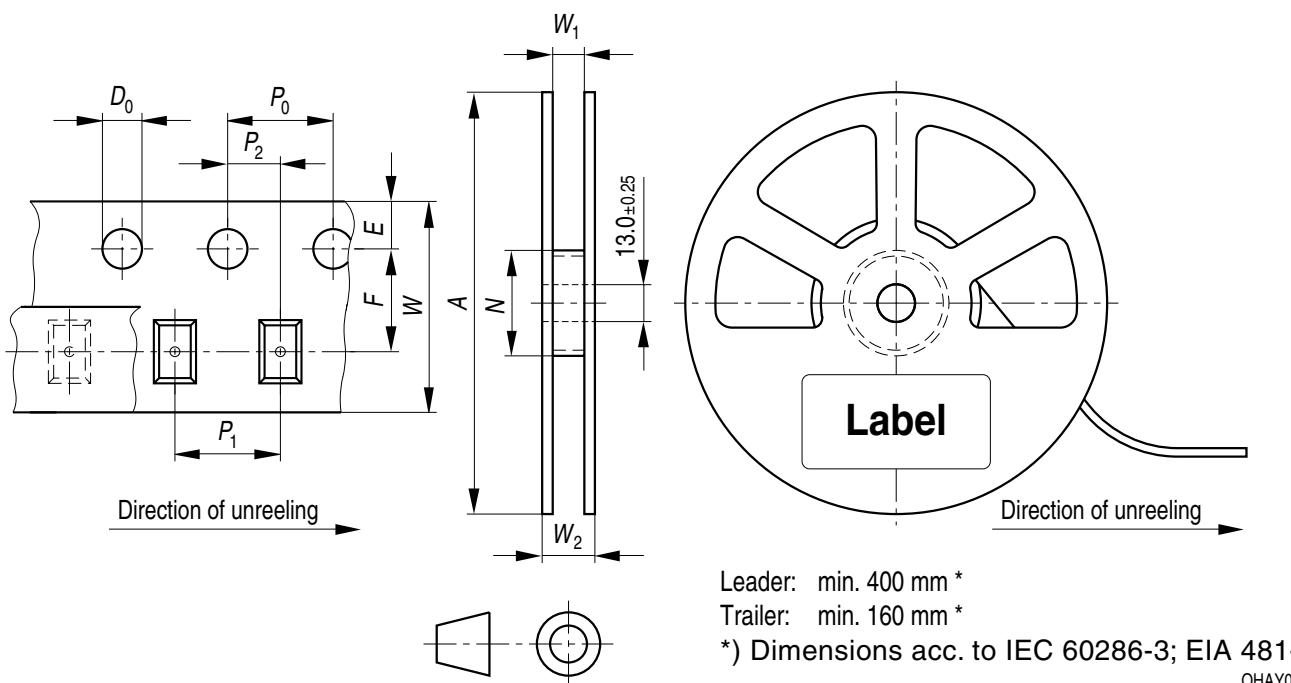
Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_p			2	3	K/s
Liquidus temperature	T_L	217			°C
Time above liquidus temperature	t_L	80	100	100	s
Peak temperature	T_p	245	260	260	°C
Time within 5 °C of the specified peak temperature T_p - 5 K	t_p	10	20	30	s
Ramp-down rate* T_p to 100 °C			3	6	K/s
Time 25 °C to T_p			480		s

All temperatures refer to the center of the package, measured on the top of the component

* slope calculation DT/Dt: Dt max. 5 s; fulfillment for the whole T-range

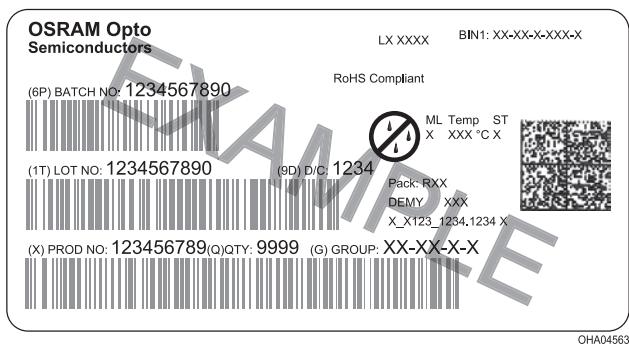
Taping ⁷⁾

C67062-A0030-B11-06

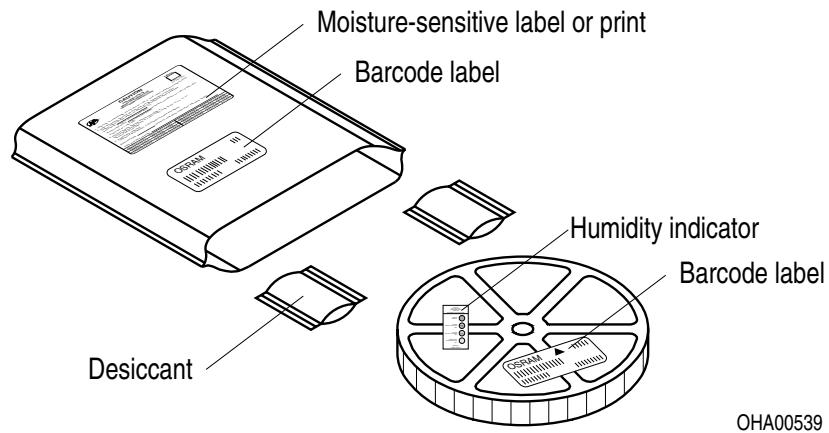
Tape and Reel ⁸⁾

Reel dimensions [mm]

A	W	N _{min}	W ₁	W _{2 max}	Pieces per PU
180 mm	12 + 0.3 / - 0.1	60	12.4 + 2	18.4	2000

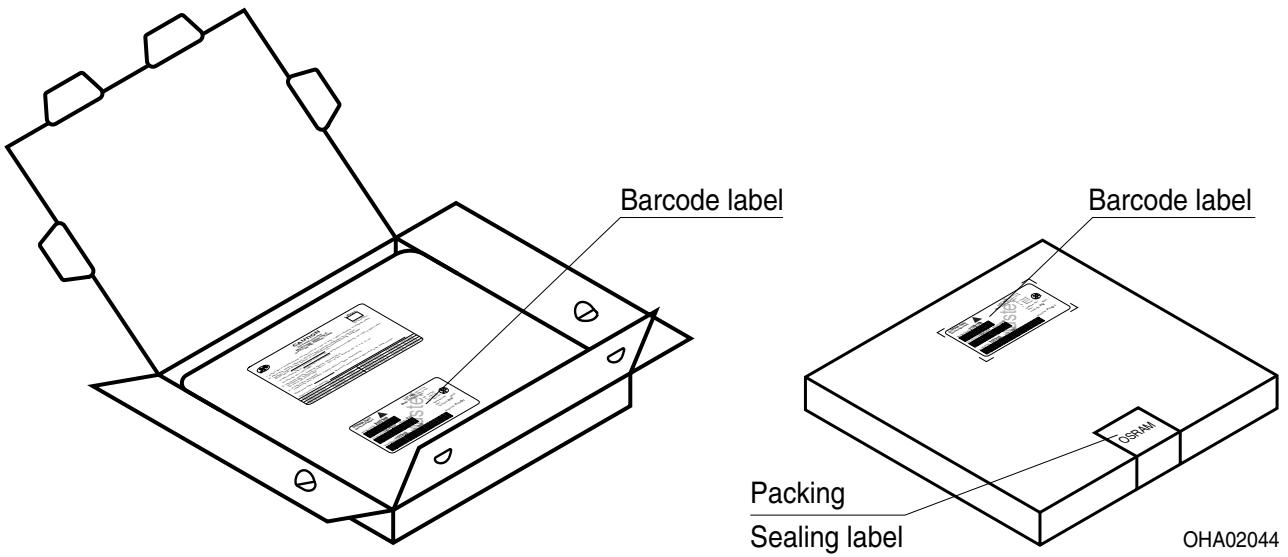
Barcode-Product-Label (BPL)

Dry Packing Process and Materials ⁷⁾



Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Transportation Packing and Materials ⁷⁾



Dimensions of transportation box in mm

Width	Length	Height
195 ± 5 mm	195 ± 5 mm	30 ± 5 mm

Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the device specified in this data sheet falls into the class **moderate risk (exposure time 0.25 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

For further application related informations please visit www.osram-os.com/appnotes

Disclaimer

Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language writings.

Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version in the OSRAM OS Webside.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Product safety devices/applications or medical devices/applications

OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

In case Buyer – or Customer supplied by Buyer – considers using OSRAM OS components in product safety devices/applications or medical devices/applications, Buyer and/or Customer has to inform the local sales partner of OSRAM OS immediately and OSRAM OS and Buyer and /or Customer will analyze and coordinate the customer-specific request between OSRAM OS and Buyer and/or Customer.

Glossary

- 1) **Total radiant flux:** Measured with integrating sphere.
- 2) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 3) **Radiant intensity:** Measured at a solid angle of $\Omega = 0.01 \text{ sr}$
- 4) **Thermal resistance:** junction - soldering point, of the device only, mounted on an ideal heatsink (e.g. metal block)
- 5) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 6) **Testing temperature:** $T_A = 25^\circ\text{C}$
- 7) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.
- 8) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

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